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A computer fault inquiry system of quick navigation

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Abstract

The computer maintains depend on the experience and knowledge of the experts. The paper poses a computer fault inquiry system of quick navigation to achieve the reusing and sharing of the knowledge of the computer maintenance. The paper presents the needs analysis of the computer fault inquiry system, and gives the partition of the system function, and then designs the system, including the database logical design, the main form menu design and directory query module design; Finally, the code implementation of the query module is given and the implementation of the computer fault quick navigation methods of the keywords-based is stress introduced.

Keywords: Fault; Inquiry System; Quick

1.Introduction

Make paper matrix maintenance knowledge convert to the digital files with computer processing, storage and display. Although, the disadvantages of the paper matrix file of the large expensive, large quantities, the poor real-time data transmission, easy to produce duplication and redundancy can be solved, at first, a unified formats and standards of the digital text is not produced, bringing a series of new problems. The company of the computer production and maintenance has stored the most of the data information in the computers, the data exchange and transmission between the enterprises and between the users and enterprises uses tapes, floppy disk or network. But sometimes because of the mutual of the different of the computer software, the standards of the implementation and the formats of the data stored, the exchange of information is still encounter many difficulties and problems, there are some automation islands and information islands. For example, often can not be read because of the different browsers, at least advance the cumbersome digital conversion can read it. So that the data re-utilization is low, much duplication work and additional work, waste of time and reduce efficiency. Hence, make the computer maintenance knowledge convert to the machine-readable and operational formalized representation knowledge, will effectively improve its utilization.

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2. Analysis of the system

The electronic interactive technical manuals are fit for the computer fault inquiry, furthermore, add new fault categories and revised the old fault categories according to the update of the contents of the fault. System function analysis:

The overall task of system development is to achieve fast of computer fault inquiry.

System function analysis is accomplished depending on the overall task of the system development. In this case, the functions of the electronic interactive technology manuals need to complete are as follows:

- User management, including user permissions, the user's management.
- Fault directory inquiries, according to the classification and sub-level of fault to find the causes and treatment methods.
- Fault keyword query, according to the fault keyword to achieve the fault content and handling inquiries.
- Fault content processing, including the super administrator add, modify and delete the contents of the fault.

The design of system function module:

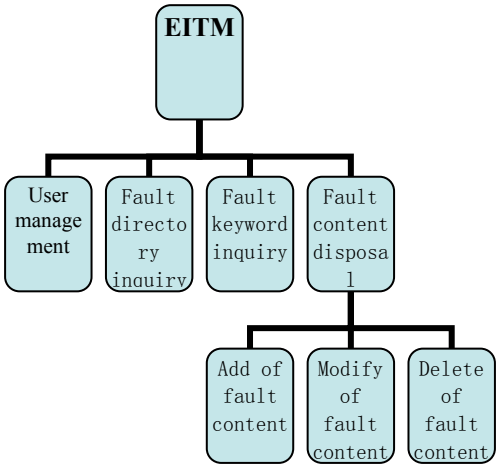

Figure 1 System structure diagram

The intelligent idea of the system queries used has following aspects:

- Use directory and keyword queries in the respect of computer fault inquiry; because the system adopts the fault type of the classification and induction system, such as motherboard fault, hard drive fault and so on, it is convenience for users in the case of knowing the fault occur in the components to query the causes and treatment methods of the fault.
- In respect of security of the system, this system uses the user permissions settings, general users only have permission to query and browse, while the super administrator with administrative user rights, at the same time to carry out system maintenance and expansion of the system content, making the system easily be used.
- In respect of the expansion of the system, the super administrator can add, modify and delete the type and content of the fault, timely update the content of the database according to the real world problems and solutions.
- In the keyword query with regard to the method used is the system characteristics. First, when the user search, the same result can be searched by using the Chinese and English, and avoid the same words in the different performance of different user habits to achieve the query results inconformity, so that the usability of the system is more widely. Second, the system can automatic statistics user

query keywords, and then according to the keyword query frequency ranked from high to low, listing relevant searches, users can easily click the query they want to search the contents.

- The automatic backup of the system, in order to ensure the security of the system database, the system should automatically backup the background database in a certain time. However, due to the time reasons, this regard is not specifically implemented.
- In respect of user inquiries, without the keyword query, directly extract the keywords from the user input to achieve the fault content query, but the knowledge related to the syntax and semantic, due to the limitation of the knowledge structure and capacity, can only serve as a kind of vision, and can not be concrete realized.

3.The design of the system

3.1. The design of logical database structure

Table of content of fault type

Listing name	Data type	Whether be empty	Description
id	int	Not null	NO. of fault content
title	char	Not null	Name of fault content

Table of sub-content of fault type

Listing name	Data type	Whether be empty	Description
id	int	Not null	No. of fault sub-content
subid	int	Not null	No. of fault content
subtitle	char	Not null	Name of fault sub-content
content	char	null	Contents of fault

Table of user Logon

Listing name	Data type	Whether be empty	Description
Id	int	Not null	User No.
UserName	char	Not null	User account number
Pwd	char	Not null	User password
Email	char	null	User e-mail

Table of transfer of Chinese-English

Listing name	Data type	Whether be empty	Description
Id	int	Not null	Auto number
Chinese	char	Not null	Query keyword

			Chinese
english	char	Not null	Query keyword English

Table of count of query keyword

Listing name	Data type	Whether be empty	Description
id	int	Not null	Auto number
name	char	Not null	Query keyword
count	int	Not null	Query count

3.2. The main form's menu

The main form menu gives the basic modules of the system, including system management module, query module and fault contents processing module. System management module realizes the three functions; there are password changes, user changes and exiting the system. Directory query module supports directory quick queries, keyword matching queries and other query methods; other inquiries to set aside the semantics query interface of RDF-based. Fault content processing is a database editor, which provides a knowledge-editor window, cutting the content of fault segmentation, semantic annotation, modify, and delete such an operation.

System management
……Change password
……Modify user
……Log out
Directory query
Keyword query
Keyword query
……Related Search
Fault content processing
……Add the fault content
……Modify the fault content
……Delete the fault content

3.3. Directory query module

Mainly achieve the following functions:
Select main directory of the fault type from the drop-down box to check the fault content and treatment methods by step, the fault types are as follows:
Booting and off fault

- Start fault
- Close fault

- Hardware and peripherals fault
  - Computer fault
  - Peripherals fault
- Software fault
  - Operating system fault
  - Application software fault

- Install fault
  - Software installation
    - System software installation
    - Application software installation
  - Equipment installation
    - Drive installation
    - Equipment add installation
  - Dysfunction fault
    - Assembly function failure
    - Software can not run
    - System failures(crashes, blue screen)
  - Performance barriers fault
    - Run speed performance
- Display fault
  - Monitor fault
  - Graphics card fault
  - Setting fault
  - Involvement of “pseudo” fault
- Network fault
  - LAN fault
  - Internet fault
- Security fault
  - Computer virus fault
  - Trojans
  - Anti-virus software fault
  - Hackers

In intelligent interactive systems, large number of users` problem is about system component fault or system application support. Solve such problems is different from the term answering problems, not only obtains some properties of phenomena and environment by the guidance of nature language understanding, but also guides the user to execute a process, and further enriches the phenomenon and environmental information by testing in order to help users finally locate the fault object or master the use of system functions. And there are a huge differences and the process varies between the components of the system, which are involved in the diagnosis program of various problems. Therefore, if the solution programs are not well organized, diagnostic module will directly face a large number of clutter problem diagnostic procedures, and seriously impact on system scalability and agility to respond.

3.4. Fault diagnosis of learning-based

In order to increase customer satisfaction of fault diagnosis and improve the efficiency and success rate of guidance and interaction, the system requires a certain capital of statistical learning. In this program, the learning function of the system statistical learning module is divided into two kinds:

- Supervised learning: supervised learning refers to the process of system learning with a certain assistance of the administrator.
- Non-supervised learning: non-supervised learning refers to the system learning process without the administrator.

No matter what kind of learning methods, the system statistical learning module based on the data is system queries problems, the guide process, diagnosis and solutions and their evaluation, specifically including:

- Customer the original query;
- Problem guide process;
- Diagnostic process;
- Solution and its evaluation.

According to the above information, system statistical learning modules will be acquisition of the following (also known as learning objectives):

- The new keywords;
- The new word module information;
- The semantic query grammar and the utility index of the word mold.
- New issues;
- In the booting process of the targeted rich media recommendation information.
- Cause of the problem

Screen the raw data stored, and select part as the training set used for statistical learning. However, as the customer service raw data stored is very large; so it requires designing the different screening strategies for different learning objectives.

Similarly, the different learning objectives need to take specific learning methods, concrete design is as follows:

- For the new keywords learning objective: choose the more customer service inquiries in the course of sub-word has been cut into a word; after the administrator confirmed, add the newly discovered keywords to the keyword library with the assistant of the maintenance interface.
- For the new word mold learning objective: use the correlation analysis method to recommend the correlation from the high degree of confidence to the administrator, after confirmed, and generating the new word mold.
- For the semantic query grammar and the utility index of the word mold learning objective: calculate the matching rate and correct rate of the semantic grammar according to the authentication information of the customer service representatives (the“right”， “reasonable” and “wrong” sign), in order to test and maintain the grammar. In like manner, calculate the utility index of the word mold. Administrator amends the semantic grammar and the word mold based on these indices, with assistant of the management interface (including the relaxation or strengthening of semantics and syntax restrictions).
- For the new issues learning objective: according to the issue guide process and the new issues which are learned and summarized by the poor customer feedback, present to the administrator who gives the guide process and corresponding solutions of the new issues.
- For the booting process of the targeted rich media recommendation information learning objective: provide the most common and relevant rich media recommendation information by statistical analyzing the frequency of the problem and it’s a good degree of guidance.
- For the cause of the problem learning objective: extract the main reason of the problem, by way of correlation analysis to guide the process, the evaluation of the guidance and analysis of the problem itself.

4. The implementation of the query module

Keyword query module mainly achieves the following functions:

Enter the retrieve fault keyword to the text box in order to retrieve the fault content and its treatment methods, the rapid and intelligent query are reflected in this module, the same search results are gained by entering Chinese and English, and according to the repeated query, the systems automatically save search keywords and list the related queries based on the number of queries by descending. mainly achieves the following functions:

Enter the retrieve fault keyword to the text box in order to retrieve the fault content and its treatment methods, the rapid and intelligent query are reflected in this module, the same search results are gained by entering Chinese and English, and according to the repeated query, the systems automatically save search keywords and list the related queries based on the number of queries by descending.

4.1 Create the keyword query interface

Figure 2 the keyword query interface

4.2. The keyword query

Keycx.asp
<!--#include file="conn.asp"-->
<% keyword=request("key")
keyword1=keyword
‘Search the content matching with the entered
keywords from the count keyword statistical table, if it exists, then plus 1 to the count value of keywords, else, add the new keyword to the table, and set the count of the new keyword as 1.
set rs = Server.CreateObject("ADODB.Recordset")
sql="select * from count where name='"&keyword&"'"
rs.open sql,conn,1,3
if not rs.eof then
rs("count")=rs("count")+1
else
rs.addnewrs("name")=keyword
rs("count")=1
rs.update
rs.close
end if
‘Search the Chinese or English matching with the entered keyword from the transfer in bilingual table, if found, then obtained the Chinese and English of the keyword from the record, evaluate to the two variables, and the query statements are linked by or statements.
set rs = Server.CreateObject("ADODB.Recordset")
sql="select * from transfer where chinese='"&keyword&"' or english='"&keyword&"'"
rs.open sql,conn,1,1
if not rs.eof then
keyword=rs("chinese")
keyword1=rs("english")

```
end if
rs.close
```

，Establish the record set, and display the search results according to the id ranked of the fault.

```
 set rs = Server.CreateObject("ADODB.Recordset")
sql="select top 18 * from sub where subtitle like '%"&keyword&"%'or subtitle like '%"&keyword1&"%' order by id"
rs.open sql,conn,1,1%>
```

In the count table, according to the count field descending, and show the first five records with a relatively high search frequency, and display in the bottom of the query interface in ultra-connected, then directly click to achieve the query results.

```
<%set rs = Server.CreateObject("ADODB.Recordset")
sql="select top 5 * from count order by count desc"
rs.open sql,conn,1,1%>
<tr>
<td>
<table width="200" border="0" cellspacing="0" cellpadding="0">
<tr><%while not rs.eof %>
<td><a href="keycx.asp?key=<%= rs("name") %>"><%= rs("name")%></a></td>
<%rs.movenext
wend
rs.close%> </tr>
</table></td>
</tr>
</table>
</body>
</html>
```

In respect of system maintenance, the regular maintenance and security maintenance are used. Regular maintenance: check, maintain and diagnosis the system, and listen to customer feedback, and timely detect the hidden danger problems, and protect the system stable and efficient operation by the means of the engineering changes, system modification and so on. Security maintenance services: update the system latest virus database, and backup the security of data.

5. Conclusions

The paper presents a construct method of the computer fault query system, and focuses on the base of the analysis of fault classification giving the links of database design and query system achievement. Actually show that the system can effectively support the maintenance engineers in the computer-assisted maintenance.

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